

DIGITAL AUDIO DECODER HAVING ERROR CONCEALMENT
USING A DYNAMIC RECOVERY DELAY AND FRAME REPEATING
AND ALSO HAVING FAST AUDIO MUTING CAPABILITIES

ABSTRACT OF THE INVENTION

5 A multimedia decoder unit having error concealment and fast muting capabilities. The audio decoder provides error concealment using a dynamic recovery delay that is based on the error rate of an input digital bitstream and also uses frame repeating. The decoder allows fast audio muting whereby audio can be muted within two audio frames of a mute signal that immediately
10 freezes the video frame, e.g., a channel change. With respect to the dynamic recovery delay, a template of fixed length is used to inspect the last frames within the template. If error is found, then the error sum is used as an index into a table length which provides a dynamic template length. Error within the dynamic template length is computed and if larger than a tolerance, the current
15 frame is muted. This allows the recovery delay to be adaptive and based on the error rate while still allowing mute merging. Muting the current frame can be achieved by repeating the previous frame but the delay data of the last block of the previous audio frame is added to the first block of the repeated audio frame to provide a smooth frame interface. In response to a mute command, the
20 decoder zeros the audio output bitstream stream to provide zero frames at the audio output buffer (AOB). In addition, the decoder also directly zeros audio frames in the AOB that lie between its the read and write pointers to guarantee that only two frames of audio be played after the mute signal.